BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 2: e25857
doi: 10.3897/biss.2.25857

OPEN ACCESS

Conference Abstract

Natural History Collection Data: Traits to Identify Plant-Pollinator Interactions in a Spatial Context

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Received: 16 Apr 2018 | Published: 04 Jul 2018

Citation: Borges R, França Costa W, Saraiva A, Imperatriz-Fonseca V, Giannini T (2018) Natural History Collection Data: Traits to Identify Plant-Pollinator Interactions in a Spatial Context. Biodiversity Information Science and Standards 2: e25857. https://doi.org/10.3897/biss.2.25857

Abstract

Natural history collections are of extreme importance as they safeguard data from both spatial and temporal sources. Biological collections store the biodiversity information of the majority of the world´s ecosystems, including data from extinct and threatened species. Worldwide, interactions betweens species perform important functions that contribute to the maintenance of the environment. The use of biodiversity by human society generates the so called Ecosystems Services (Nature's Contributions to People), which may act at a local or even a global scale, as is the case with crop pollination services. Bees are the most important pollinator group and are responsible for the pollination of approximately 80% of Angiosperms and 75% of the crops worldwide.

Bee pollinator decline has raised concern globally, the loss and degradation of habitat being one of the causes, with detrimental impacts on food production and biodiversity. In this context, we suggest incorporating and providing spatially explicit plant-pollinator interaction data into natural history collections databases. Plant-pollinator interaction traits (morphological, biochemical, physiological, structural, phenological or behavioural characteristics of organisms that influence performance or fitness) can firstly be identified through pollination syndromes by using floral traits such as size, shape, color, odor and the

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reward. Bee body size (estimated usually by intertegular distance) and tongue length are important traits that can be used to evaluate bee-flower compatibility and also to estimate an average flight range for each bee species through the landscape. Since interaction is context dependent, data on functional traits could be associated with spatial references, such as geographic coordinates, altitude and land use where species were collected. Such information is usually available in data repositories delivered by collections. Thus, the association of species identification, functional traits and occurrences can act as an important tool for understanding local ecosystem processes, to forecast impacts based on land use and climate change and also for assisting decision making processes for nature conservation. Online databases must also be linked to a Digital Object Identifier (DOI), as is the case for data plubications, so that the work of providing the data can be properly acknowledged and cited in the literature.

Keywords

Bee, functional traits, biodiversity, pollination, body size

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Presented at

SPNHC 2018